PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Method of and means for Preparing a Web Roll for use in Web Renewing Mechanism for Printing Machines

We, R. HOE & Co. LIMITED, a company organised under the laws of Great Britain, of 109—112, Borough Road, London, S.E.1, do hereby declare the nature of this invention (which has been communicated to us by R. Hoe & Co. Inc., a corporation organised and existing under the laws of the State of New York, United States of America, of 138th Street, & East River, City of New York, County of Bronx, State of New York, United States of America), and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

This invention relates to the preparation of a replacement roll used in full speed roll changing mechanism for printing machines, the preparation being such as to enable the web of the replacement roll to be joined to the running web of an expiring web roll. The invention is more particularly concerned with the holding of the end of the web of the replacement roll against the body of the roll in such a manner that it will readily release itself at the time the join is made.

Before joining the web of a web replacement roll with the web of an expiring web roll, adhesive is applied to the leading end of the web of the replacement roll, upon its outer surface and the roll is then rotated up to the speed of the running web. The roll and running web are then moved relatively to each other, into contact, to cause the adhesive covered portion of the replacement roll to adhere to the running web of the expiring roll, which latter web is then severed and the new web is drawn into the printing machine.

Various means and mechanisms have been suggested and used for holding the free end of the web of the replacement roll closely thereto while it is being brought up to the speed of the running web and before it is joined thereto and for enabling the web of the replacement roll to free itself from the body of the roll when it adheres to the running web. All of these have contemplated the provision of means to cause a quick release of the aforesaid free web end at the moment the web join is made, so as not unduly to strain the respective webs or cause interruption in the machine operation.

Proposals have been made to weaken the web by perforation so as to provide a line of weakness along which the web will readily tear when the web is to be drawn off by the running web passing from a running roll.

The main object of the present invention is to dispense with the necessity for providing the web with perforations and according to the invention in a replacement roll having adhesive applied to it to enable the web of the roll to adhere to and to be drawn off by a running web the leading end of the web is imperforated and is secured to the body of the roll at one or more points which are spaced from the adhesive in such a manner as to leave the zone or zones through which the web itself tears when adherence is effected and the web commences to be drawn off.

The invention is illustrated in the accompanying drawing.

In figure 1 of the drawing there is illustrated a typical non-stop roll changing mechanism comprising a roll supporting reel 11 rotatably mounted upon a support 12 and adapted by means of arms 13, 14 and 15 to rotatably support web rolls and to be actuated to move them into and out of web feeding position. An expiring web roll 16 is shown supported by arm 13 with its web 17 running to a printing machine (not shown), the reel 11 having been rotated to move the expiring roll 16 into the position shown, from the position at present occupied by the replacement roll 18 which is shown in web joining position with respect to the web 17.

A roll rotating device including a driven belt 19, is provided, to rotate the roll 18 and bring it up to the speed of the running web 17 before the join between the respective webs is made. A swingable web engaging brush 21 is provided to press the running web 17 against the roll 18 to cause it to be joined to the web end hereinafter referred to as 22 thereof by adhesive previously disposed thereupon, and a web severing knife 23 is provided

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to sever the running web 17 as soon as the join is made. It will be understood that suitable mechanism is provided to operate the roll rotating belt 19, the brush 21 and the knife 23 in properly timed sequence so that no interruption in the operation of the machine will be caused.

As referred to above, adhesive is disposed between the web 17 and the web end 22 of the replacement roll previous to making the join, and this is indicated herein as being applied upon the web end 22 in the form of a narrow strip hereinafter referred to as 24. The strip of adhesive 24 follows the contour of the form of the web end, being disposed close to the edge thereof, a space being left where no adhesive is applied, as indicated at 25 to permit contact of the belt 19 therewith without it adhering thereto.

As shown in figure 2 the web end 22 is shaped to form a fish-tail having two apices or salient angles and in figure 3 the web end is shaped to provide a single salient angle, the adhesive 24 following the shaping of the web end. A spot 38 of adhesive is disposed beneath the web end 22 adjacent the two apices of the arrangement shown in figure 2 and adjacent the single apex of the arrangement shown in figure 3, the spot being disposed to leave a strip of web material between it and the adhesive 24: this provides a tearing zone or zones enabling the web end to tear readily without having to perforate the web.

In figure 2 a reinforcing strip 44 is disposed angularly with respect to the roll axis, while in figure 3 a reinforcing piece 42 is provided beneath the web end and adjacent the spot 38 of adhesive. This reinforcing piece 42 is in the form of a fish-tail the angle of which straddles the adhesive spot 38.

It will be seen that when adherence is effected between the web passing from the expiring roll and the adhesive 24 on the replacement roll the end of the web of the replacement roll is caused to tear along the line between the spots 38 and the adjacent parts of the adhesive 24. The provision of the strips 44 in figure 2 and of the reinforcing piece 42 in figure 3 operates to assist the tear at the salient angles and directs the tear of the web towards one side of the roll.

In both of these figures 2 and 3 small arrows indicate the direction of the lines of tear.

Further to assist the positive action of parting a portion of the web end from the roll the strips 44 of figure 2 and the pieces 42 of figure 3 extend accordingly from under the respective web ends and are adapted by having adhesive applied to these projecting portions to adhere to the running web 17 when contact is made therewith.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. For use in web renewing mechanism, a replacement roll having adhesive applied to it to enable the web of the roll to adhere to and to be drawn off by a running web and in which the leading end of the said web is imperforate and is secured to the body of the roll on one or more points which are spaced from the adhesive in such a manner as to leave a zone or zones through which the web itself tears when adherence is effected and the web commences to be drawn off.

2. A roll as claimed in claim 1 and in which the web end is shaped to provide one or more salient angles, the apex or apices of which are secured to the body of the roll, the adhesive material being applied along the side edges of the or each salient and being clear of the points of securing of the apex or apices so as to provide the zone or zones through which the web tears.

3. A roll as claimed in claim 1 or 2 and in which the adhesive and the point or points of securing of the web end to the body of the roll are so disposed that the line of tear through the zone or zones extends diagonally to the roll.

4. A roll as claimed in claim 2 or 3 and in which a single salient is formed by shaping the end of the web backwardly from a substantially central apex or salient at which the web end is secured to the body of the roll leaving a zone between the point of securing and the adhesive.

5. A roll as claimed in claim 2 or 3 and in which two salient angles are provided by shaping the end of the web to a fish-tail shape having two salient angles or apices spaced apart across the width of the roll, the end of the web being secured at each apex to the body of the roll and leaving a zone between the point of securing and the adhesive.

6. A roll as claimed in any of the preceding claims and having one or more reinforcing strips applied to the web end to reinforce the said end in the region of the adhesive and to assist in directing the tear through the zone or zones between the adhesives and the point or points at which the web end is secured to the body of the roll.

7. A roll as claimed in claim 6 and in which the said reinforcing strip or strips project beyond the end of the roll, the said

projecting ends having adhesive on their outer surface causing adhesion to the running web.

8. A roll as claimed in any of the preceding claims and in which the end of the web is secured to the body of the roll by one or more spots of adhesive.

9. The method of preparing a replacement roll for use in a web renewing operation which consists in applying adhesive to the outer surface of the imperforate leading end of the web and in securing the said end to the body of the roll in such manner as to leave one or more tearing zones of web material between the point or points at which the web end is secured and the adhesive.

10. A web roll prepared substantially as described with reference to the accompanying drawing.

Dated the 25th day of February, 1938.
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24, Southampton Buildings, London,
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[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

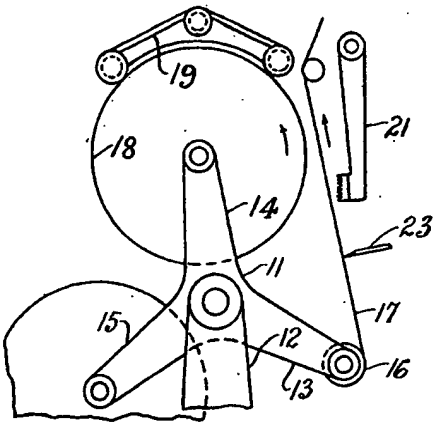


Fig. 2.

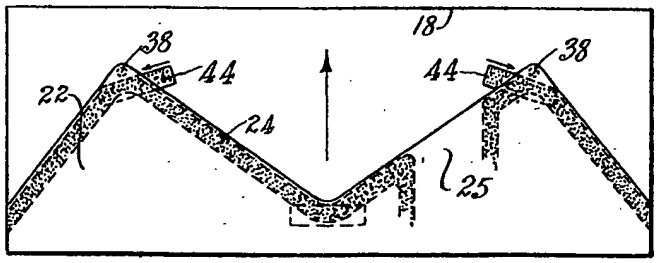
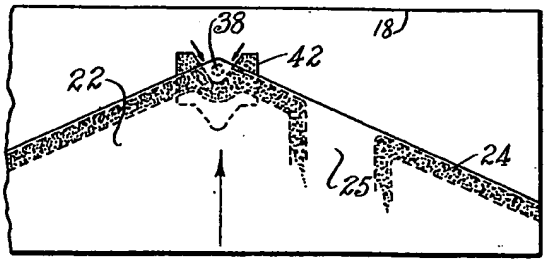


Fig. 3.



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